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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,502	03/11/2004	Yi-Hui Chang	1176/220	8274

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LIU & LIU
444 S. FLOWER STREET SUITE 1750
LOS ANGELES, CA 90071

EXAMINER	
CHOWDHURY, TARIFUR RASHID	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/799,502	CHANG, YI-HUI	
	Examiner	Art Unit	
	Tarifur R. Chowdhury	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 27-29, 36, 37, 45 and 49-52 are rejected under 35 U.S.C. 102(e) as being anticipated by Chuang et al., (Chuang), US 2004/0130515.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Chuang discloses and shows in Figs. 3-8, a backlight device, comprising:

- a two dimensional array of point light sources (12) such as LED's supported on a back plate (10); and
- a planar light guide plate (14) comprising a first surface facing the array of point light sources and a second surface emitting light passing through the light guide plate, wherein the first surface comprise a two dimensional array of

convex structures (15) (page 3, paragraph 0052), with each convex structure aligned with a point light source in the array of point light sources.

Accordingly, claims 27, 36, 37, 51 and 52 are anticipated.

As to claim 28, it is clear from Fig. 5 that the two dimensional array of convex structures comprises convex structures distributed uniformly in both dimensions of the first surface of the light guide plate.

As to claim 29, it is also clear from Fig. 5 that the two dimensional array of convex structures comprises convex structures distributed in a two-dimensional matrix across plane of the first surface of the light guide plate.

As to claim 45, Chuang also discloses and shows in Fig. 3 that the backlight device further comprises a diffusion sheet (16) disposed adjacent to the second surface.

As to claims 49 and 50, Chuang also shows in Fig. 3 that an LCD panel (30) is positioned relative to the light-emitting surface, receiving light emitted from the light emitting surface and the diffusion sheet (16) is disposed between the LCD panel and the second surface of the backlight device.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 39-44 and 46-48 are rejected under 35 U.S.C. 103(a) as being obvious over Chuang.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As to claim 39-44, Chuang does not explicitly disclose the claimed shape of the convex structures. However, since applicant has not disclosed any criticality or particular advantages for using different design configurations for the convex structures and using a convex structure having a truncated cone shape or wherein the convex structure has a proximal end portion and a distal end portion, wherein the cross section of the proximal end portion is either circular or hexagonal and the cross section of the distal end portion circular, and the section of the distal end portion is smaller than the proximal end portion, is considered as routine skill in the art the limitations would have

at least been obvious to prevent unevenness of the brightness and to obtain uniform distribution of light.

As to claims 46 and 47, Chuang differs from the claimed invention because he does not explicitly disclose that the second surface of the light guide plate is jagged or uneven. However, having a light guide plate wherein both surfaces of the light guide plate are uneven is common and known in the art and thus would have at least been obvious to make the second surface of the light guide plate uneven to further compensate the unevenness of the brightness.

As to claim 48, using light guide plate comprising at least one of polymethylmethacrylate (PMMA), polycarbonate, or a combination thereof is common and known in the art and thus would have been obvious because of the transparency and good workability of these materials.

5. Claims 27-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funamoto et al., (Funamoto), US 2003/0206408 in view of Yokoyama, US 2003/0147055 and further in view of Cho et al., (Cho), KR 2002071358.

6. Funamoto discloses 1A and 1B, a backlight device comprising:

- a array of point light sources such as LEDs (2); and
- a planar light guide plate (11) comprising a first surface facing the array of point light sources and a second surface emitting light passing through the light guide plate, wherein the first surface comprises two dimensional array of protrusions/convex structures (12) distributed uniformly in a two dimensional

matrix across plane of the first surface of the light guide plate (Fig. 1B; page 2, paragraph 0023).

Funamoto differs from the claimed invention because he does not explicitly disclose that the array of point light sources are two-dimensional. Yokoyama discloses a backlight device having an array of two-dimensional point light sources such as LEDs (Fig. 1). He also discloses that using an array of two-dimensional point light sources is advantageous for miniaturization and capability of displaying projected images having uniform light intensity (page 1, paragraph 0011).

Yokoyama is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use an array of two-dimensional point light sources.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use an array of two-dimensional point light sources in the device of Funamoto for several advantages such as miniaturization and projected images of uniform light intensity, as per the teachings of Yokoyama.

Still lacking is the limitation such as each of the convex structure of the light guide being aligned with a point light source.

Cho discloses a backlight device wherein each of the light source (10) is aligned with each convex structure of the light guide. Cho also discloses that such an structure is advantageous since it provides a backlight that maintains the uniformity of luminance while realizing a light weight device (abstract).

Cho is evidence that ordinary workers in the art would find a reason, suggestion or motivation to align light sources with each convex structure of a light guide.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device of Funamoto when modified by Yokoyama by aligning each convex structure with a point light source in the array of the point light sources for advantages such as uniform luminance and light weight device, as per the teachings of Cho.

Accordingly, claims 27-29, 36, 37, 51 and 52 would have been obvious.

As to claim 30, it is clear from Fig. 1A of Funamoto that the first surface further comprises a planar surface from which the convex structures extend.

As to claims 31, 34, 35 and 38, Cho shows that each convex structure has a arc-shape recess directly facing each light source (10) and that the light sources are juxtaposed to the convex structures such that light emitted from the point light sources are substantially received through the convex structure.

As to claims 32 and 33, since applicant has not disclosed any criticality or advantages for keeping at least a portion of the point light sources outside the corresponding recess of the convex structure, the limitation would have at least been obvious for preventing any damage to the point light source for being too close to the recess.

As to claim 39-44, since applicant has not disclosed any criticality or particular advantages for using different design configurations for the convex structures and using a convex structure having a truncated cone shape or wherein the convex structure has a proximal end portion and a distal end portion, wherein the cross section of the proximal end portion is either circular or hexagonal and the cross section of the distal

end portion circular, and the section of the distal end portion is smaller than the proximal end portion, is considered as routine skill in the art the limitations would have at least been obvious to prevent unevenness of the brightness and to obtain uniform distribution of light.

As to claims 46 and 47, having a light guide plate wherein both surfaces of the light guide plate are uneven is common and known in the art and thus would have at least been obvious to make the second surface of the light guide plate uneven to further compensate the unevenness of the brightness.

As to claim 48, Funamoto discloses (paragraph 0122) that the material of the light guide comprises polycarbonate.

As to claim 49, Funamoto also discloses (paragraph 0013) a liquid crystal display device using the backlight device.

As to claims 45 and 50, using a employing a diffusing sheet between the LCD panel and the second surface of the backlight device is common and known in the art and thus would have been obvious to improve brightness.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Especially applicant's attention is respectfully requested to JP 11-249134, US 2004/0100664 that seems very close to what the instant application is claiming.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R. Chowdhury whose telephone number is (571) 272-2287. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRC
March 18, 2006

TARIFUR R. CHOWDHURY
PRIMARY EXAMINER